Original Paper

Effect of aquatic extract of *Cannabis sativa* leaves on degeneration of alpha motoneurons in spinal cord after sciatic nerve compression in Rats

Tehranipour M (PhD)[1], Javadmoosavi BZ (MSc)*[2]
Kehtarpour M (MSc)[2], Khayyatzade J (PhD)[1]
[1]Assistant Professor, Department of Biology, Islamic Azad University, Mashhad Branch, Mashhad, Iran.
[2]MSc in Animal Biology, Department of Biology, Islamic Azad University, Mashhad Branch, Mashhad, Iran.

Abstract

Background and Objective: Neurons are injured under physical, chemical and pathological conditions. The effects of injuries in peripheral nervous system returns as retrograde to the cell body of neurons in central nervous system and causes brain and spinal degeneration. This study was done to evaluate the effect of aquatic extract of *Cannabis sativa* leaves on degeneration of alpha motoneurons in spinal cord after sciatic nerve compression in Rats.

Materials and Methods: This experimental study was carried out on thirty two male Wistar rats, weighing 300-350 grams. Animals were divided into four groups each consisting eight members; A: control, B: compression, C: compression + treatment with 25 mg/kg aquatic extract, D: compression + treatment with 50 mg/kg aquatic extract. In order to induce compression in B, C and D, after cutting the right thigh muscle, Sciatic nerve of thigh was exposed to compression for 60 seconds using locker pincers. The first extract injection was done intraperitoneally immediately after compression and the second intera peritoneal injection was done 7 days later. 28 days after compression, the Lumbar spinal cord were dissected, fixed and stained with toluidine blue. The density of alpha motoneurons was measured using dissector and stereological methods. Data was analyzed with using Minitab-13 software, ANOVA and Tukey tests.

Results: Neuronal density was 611.5±34.2 and 1633.4±30.7 in compression and control groups respectively ($P<0.001$). There was a meaningful statistical increase in neuronal density of group C (1278.6±28.1) in comparing compression group ($P<0.001$). The neuronal density in group (D) (1549.8±87.7), significantly increased in comparison with group (B) ($P<0.001$).

Conclusion: This study showed that aquatic extract of *Cannabis sativa* leaves increases the density of alpha motoneurons in spinal cord after sciatic nerve compression in Rats. The increase in neuronal density is relevant to the amount of extract used.

Keywords: *Cannabis sativa*, Degeneration, Spinal cord, Alpha motoneurons, Rat

*** Corresponding Author: Javadmoosavi BZ (MSc), E-mail: javadmosavi60@yahoo.com**

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